

Supplement 1. Figures on metals and different benthic community components, and a table of ANOVA results

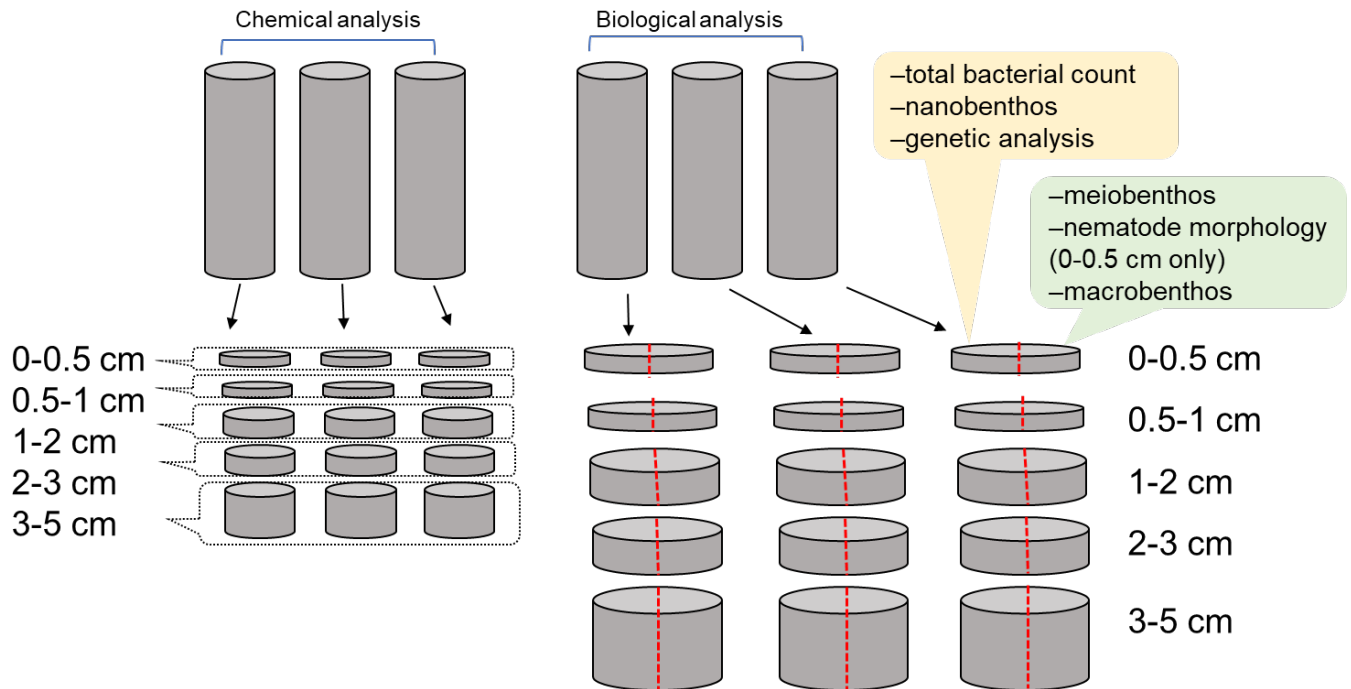


Fig. S1. Division of the the three cores at each station for chemical analyses is shown on the left while division of the three cores at each station for biological analyses is shown on the right. For chemical analyses, the sediment slices from all three cores were combined into one replicate, while for biological analyses, each core was treated as a replicate, with half of each slice used for bacterial, nanobenthic, and nematode analyses and the other half used for meiobenthic/macrobenthic abundance and biomass due to the necessity of different preservation methods.

Table S1. Results of 2-way parametric ANOVAs (Time*Impact interaction term) (left) and 1-way non-parametric ANOVAs (right) comparing A) abundances, B) biomass, and C) diversity of various benthic-community components among impact categories (unimpacted, moderately impacted, and heavily impacted) at each time point before and after the test-mining experiment. Significant differences (p-value < 0.05) are highlighted in yellow while differences that are near significant (0.05 < p-value < 0.1) are highlighted in blue. DF stands for degrees of freedom.

A)

	Time*Impact DF	Time*Impact F Ratio	Time*Impact P Value	Time	DF	chi- squared	P Value
<u>Abundance</u>							
Nanofauna	10, 63	2.549	0.0119	Pre-test	2	6.269	0.0435
				2 Weeks	2	1.361	0.5065
				6 Months	2	3.877	0.1439
				1 Year	2	3.289	0.1931
				2 Years	2	0.282	0.8685
				3 Years	2	1.141	0.5652
Total Meiofauna	10, 63	2.759	0.0069	Pre-test	2	2.68	0.2619
				2 Weeks	2	1.838	0.3989
				6 Months	2	10.109	0.0064
				1 Year	2	1.156	0.5611
				2 Years	2	1.308	0.52
				3 Years	2	4.795	0.091
Meiofaunal Nematodes	10, 63	2.977	0.0039	Pre-test	2	1.308	0.52
				2 Weeks	2	2.281	0.3197
				6 Months	2	8.205	0.0165
				1 Year	2	1.067	0.5866
				2 Years	2	0.282	0.8685
				3 Years	2	8.231	0.0163
Meiofaunal Arthropods	10, 63	2.218	0.0277	Pre-test	2	0.601	0.7403
				2 Weeks	2	6.589	0.0371
				6 Months	2	8.478	0.0144
				1 Year	2	3.317	0.1905
				2 Years	2	1.476	0.478
				3 Years	2	6.7	0.0351
Total Macrofauna	10, 63	1.988	0.0495	Pre-test	2	6.06	0.0483
				2 Weeks	2	9.514	0.0086
				6 Months	2	5.713	0.0575
				1 Year	2	6.938	0.0312
				2 Years	2	6.545	0.0379
				3 Years	2	4.846	0.0887
Macrofaunal Annelids	10, 63	2.258	0.0251	Pre-test	2	8.529	0.0141
				2 Weeks	2	8.452	0.0146
				6 Months	2	1.543	0.4623
				1 Year	2	2.504	0.2859
				2 Years	2	0.388	0.8236
				3 Years	2	4.636	0.0985
Macrofaunal NonAnnelids	10, 63	2.463	0.0149	Pre-test	2	3.432	0.1797
				2 Weeks	2	9.1	0.0106
				6 Months	2	9.03	0.0109
				1 Year	2	3.231	0.1988
				2 Years	2	8.019	0.0181
				3 Years	2	4.061	0.1313

B)

	Time*Impact DF	Time*Impact F Ratio	Time*Impact P Value	Time	DF	chi- squared	P Value
<u>Biomass</u>							
Total Meiofauna	10, 63	1.834	0.0725	Pre-test	2	1.449	0.4846
				2 Weeks	2	4.86	0.0881
				6 Months	2	8.144	0.017
				1 Year	2	0.089	0.9565
				2 Years	2	7.192	0.0274
				3 Years	2	5.756	0.0562
Meiofaunal Arthropods	10, 63	2.588	0.0108	Pre-test	2	0.487	0.7838
				2 Weeks	2	6.83	0.0329
				6 Months	2	9.018	0.011
				1 Year	2	2.489	0.2881
				2 Years	2	2.077	0.354
				3 Years	2	6.846	0.0326
Total Macrofauna	10, 63	1.709	0.0982	Pre-test	2	6.231	0.0444
				2 Weeks	2	3.408	0.182
				6 Months	2	0.706	0.7024
				1 Year	2	1.067	0.5866
				2 Years	2	1.103	0.5762
				3 Years	2	6.064	0.0482
Macrofaunal Annelids	10, 63	2.594	0.0106	Pre-test	2	6.385	0.0411
				2 Weeks	2	3.067	0.2158
				6 Months	2	3.057	0.2169
				1 Year	2	0.089	0.9565
				2 Years	2	3.308	0.1913
				3 Years	2	6.231	0.0444
Macrofaunal NonAnnelids	10, 63	1.541	0.1459	Pre-test	2	0.077	0.9623
				2 Weeks	2	5.197	0.0744
				6 Months	2	5.451	0.0655
				1 Year	2	3.231	0.1988
				2 Years	2	8.019	0.0181
				3 Years	2	3.134	0.2087

C)

	Time*Impact DF	Time*Impact F Ratio	Time*Impact P Value	Time	DF	chi- squared	P Value
<u>Diversity</u>							
Meiofauna Richness	10, 63	1.268	0.2679	Pre-test	2	6.107	0.0412
				2 Weeks	2	8.078	0.0176
				6 Months	2	6.717	0.0348
				1 Year	2	3.444	0.1787
				2 Years	2	7.085	0.0289
				3 Years	2	4.561	0.1022
Meiofaunal Nematode Genera Richness	10, 63	2.988	0.0038	Pre-test	2	3.182	0.2037
				2 Weeks	2	5.424	0.0664
				6 Months	2	4.388	0.1115
				1 Year	2	6.252	0.0439
				2 Years	2	8.051	0.0179
				3 Years	2	7	0.0302
Nematode: Copepod Ratio	10, 63	1.943	0.0555	Pre-test	2	0.282	0.8685
				2 Weeks	2	8.565	0.0138
				6 Months	2	3.246	0.1973
				1 Year	2	1.689	0.4298
				2 Years	2	0.423	0.8093
				3 Years	2	8.692	0.013
Macrofauna Richness	10, 63	1.932	0.057	Pre-test	2	7.095	0.0288
				2 Weeks	2	7.592	0.0225
				6 Months	2	4.307	0.1161
				1 Year	2	4.83	0.0894
				2 Years	2	6.568	0.0375
				3 Years	2	6.76	0.034
Macrofaunal Percent Annelids	10, 63	2.281	0.0236	Pre-test	2	4.747	0.0931
				2 Weeks	2	7.279	0.0263
				6 Months	2	7.495	0.0236
				1 Year	2	3.231	0.1988
				2 Years	2	8.019	0.0181
				3 Years	2	2.578	0.2756

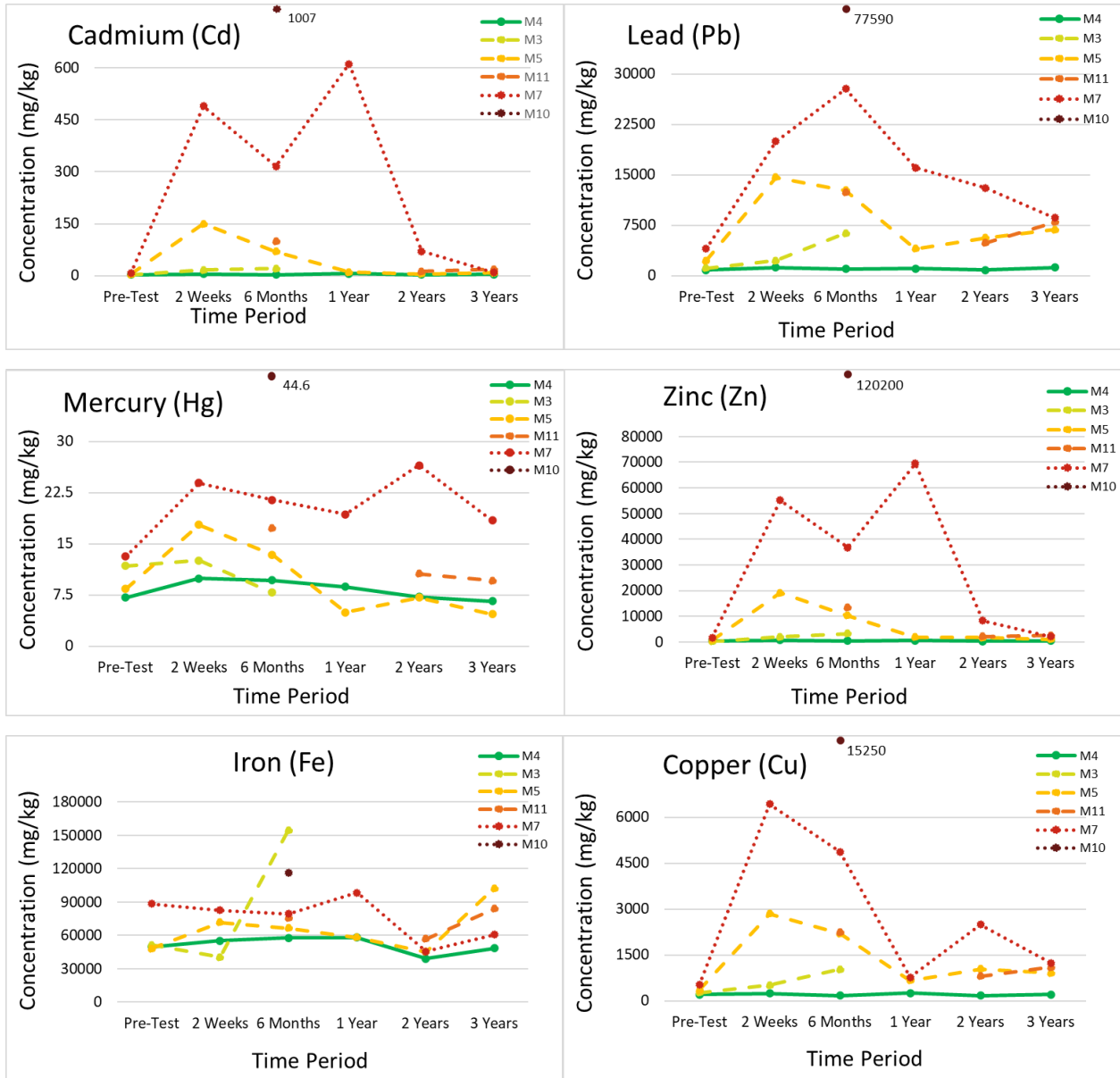


Fig. S2. Metal concentrations in the surface 0.5 cm of sediment at each site and time period. Metal concentrations are in mg/kg. Green solid lines represent unimpacted stations, yellow/orange dashed lines represent moderately impacted stations and red/dark red dotted lines represent heavily impacted stations.

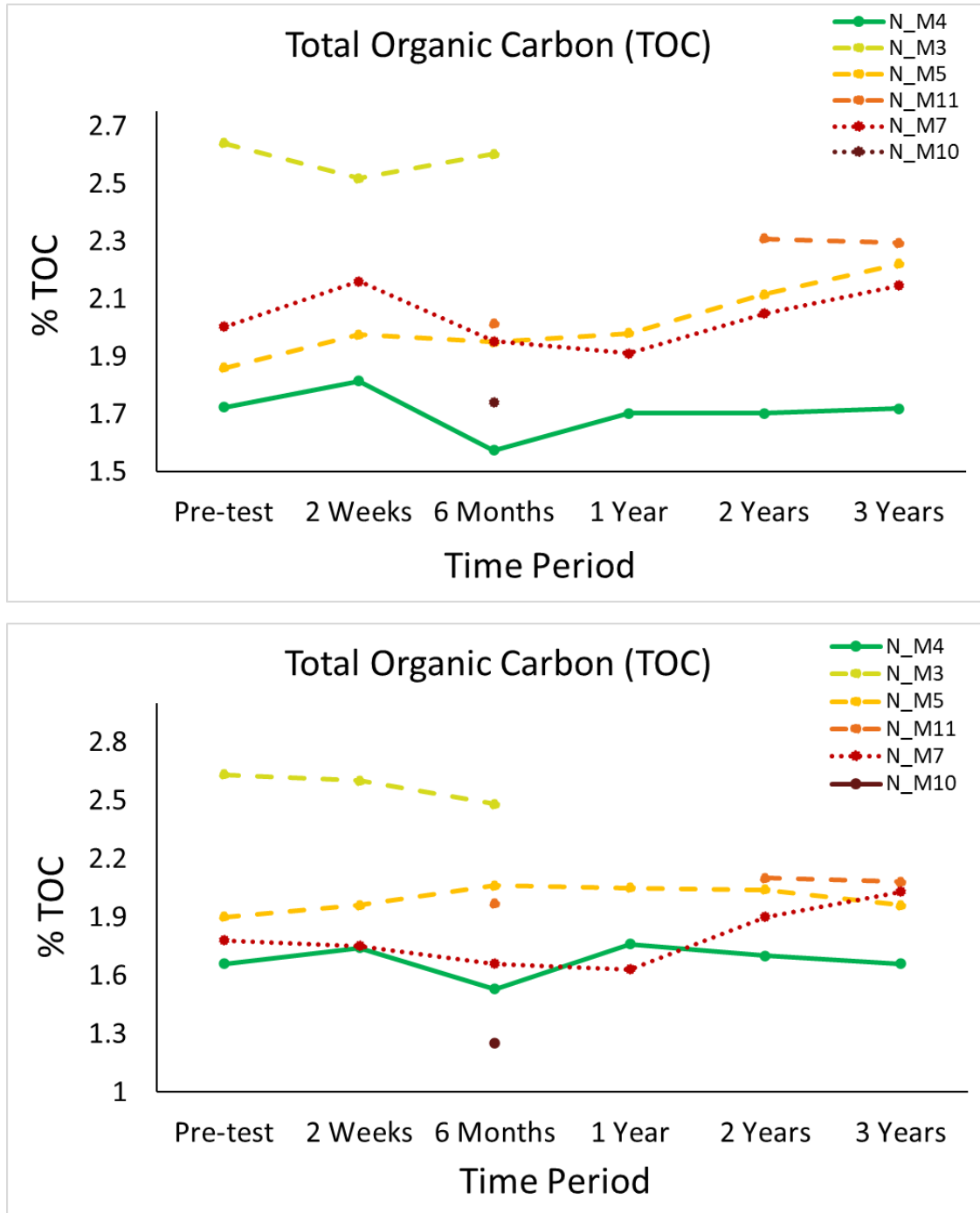


Fig. S3. The percent of sediment total organic carbon (TOC), A) throughout the 0 – 5 cm sample and B) in the surface 0 – 0.5 cm of sediment at each site and time period. Green solid lines represent unimpacted stations, yellow/orange dashed lines represent moderately impacted stations and red/dark red dotted lines represent heavily impacted stations.

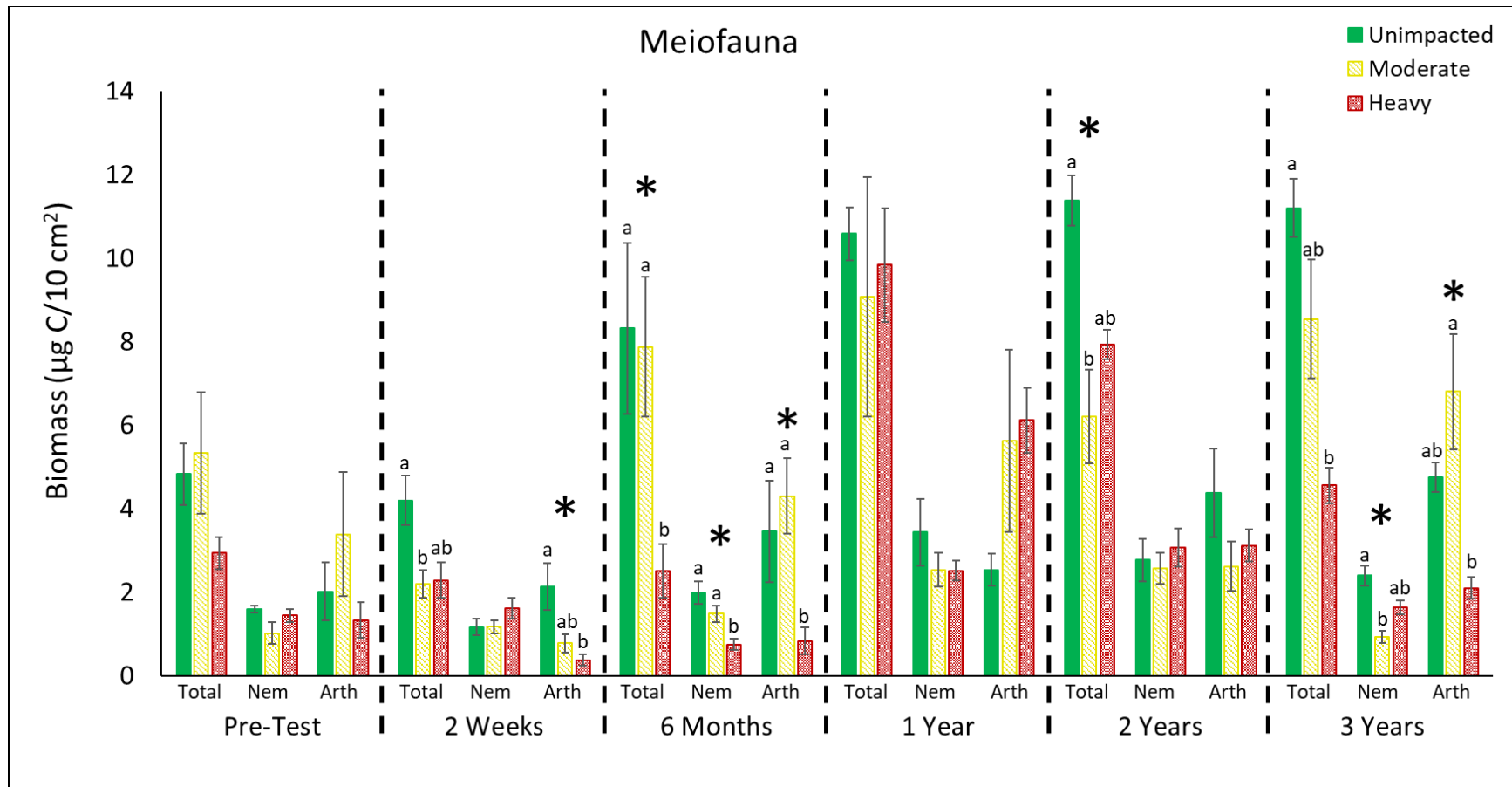


Fig. S4. Average biomass for all meiofauna (Total), meiofaunal nematodes (Nem), and meiofaunal arthropods (Arth) for all replicate cores within an impact category for each time period. Error bars represent standard error while asterisks above a time period represent a significant difference among impact categories different letters above bars representing significantly pairwise differences. Letters without an asterisk represent analyses where pairwise comparisons found significant differences, but the p-value for the ANOVA interaction term was near significant (<0.01).

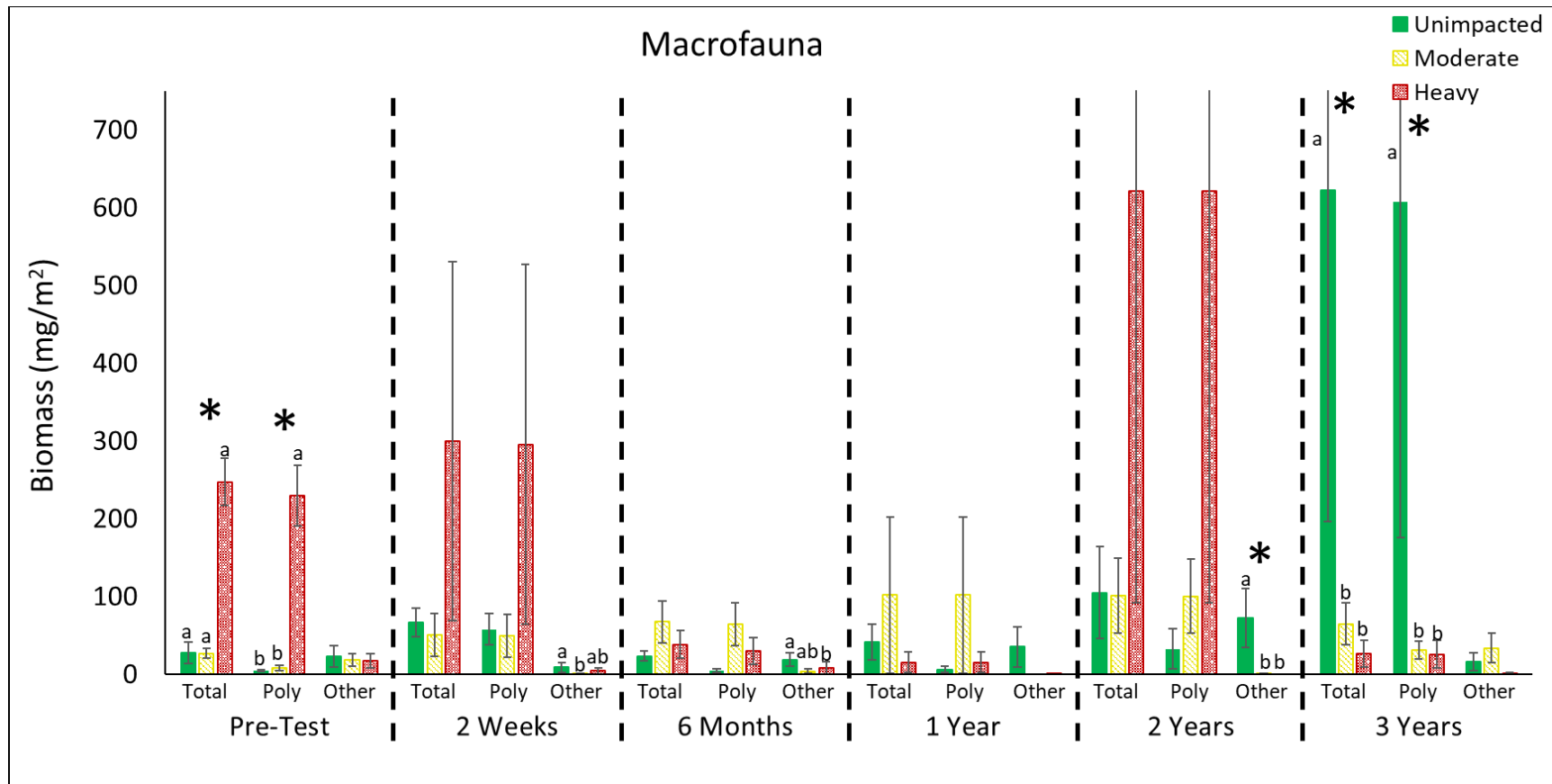


Fig. S5. Average counts for all macrofauna (Total), macrofaunal polychaetes (Poly), and macrofaunal non-polychaetes (Other) for all replicate cores within an impact category for each time period. Error bars represent standard error while asterisks above a time period represent a significant difference among impact categories different letters above bars representing significantly pairwise differences. Letters without an asterisk represent analyses where pairwise comparisons found significant differences, but the p-value for the ANOVA interaction term was near significant (<0.01).

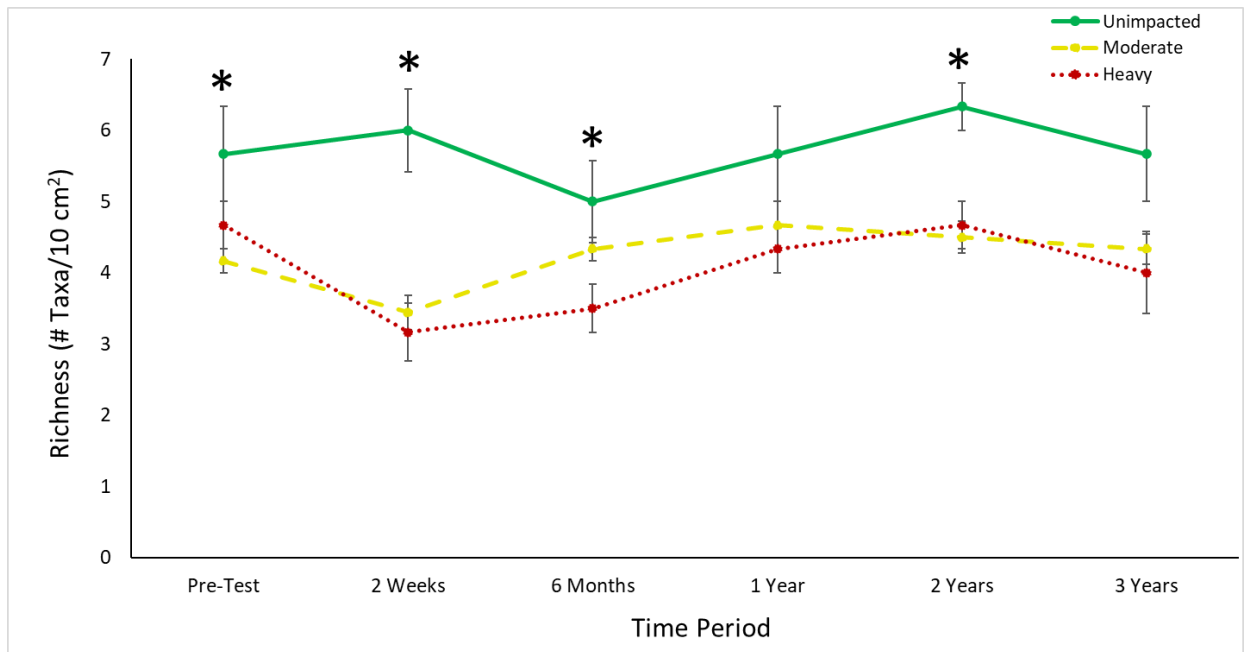


Fig. S6. Average meiofaunal taxa richness of all cores collected within an impact category and time period. The interaction term of the 2-way ANOVA (impact category*time period) had a p-value > 0.1 , error bars represent standard error while asterisks indicate significant pairwise differences.

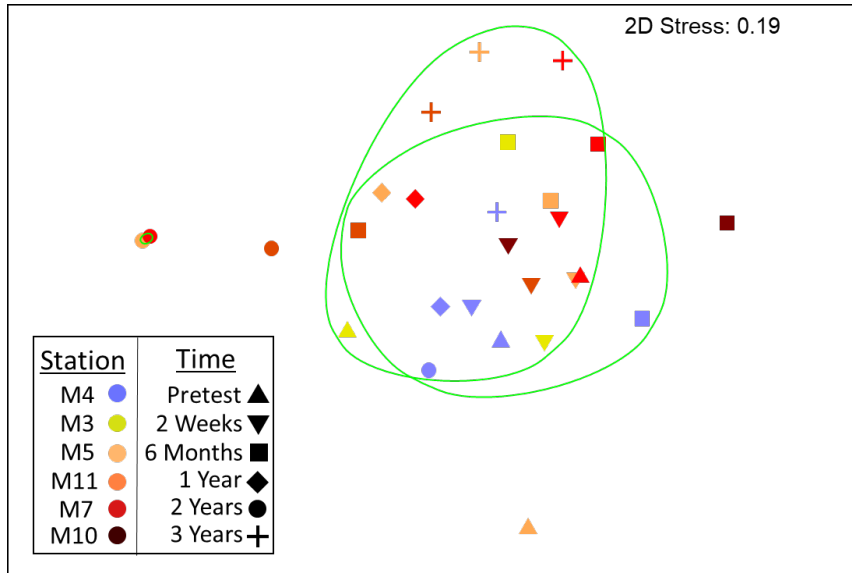


Fig. S7. nMDS plot of nematode families. Different colors denote different stations and impact categories (green = unimpacted, yellow/orange = moderately impacted, red = heavily impacted) while different shapes denote different time periods. Green outlines around stations indicate significant clusters identified using SIMPROF.

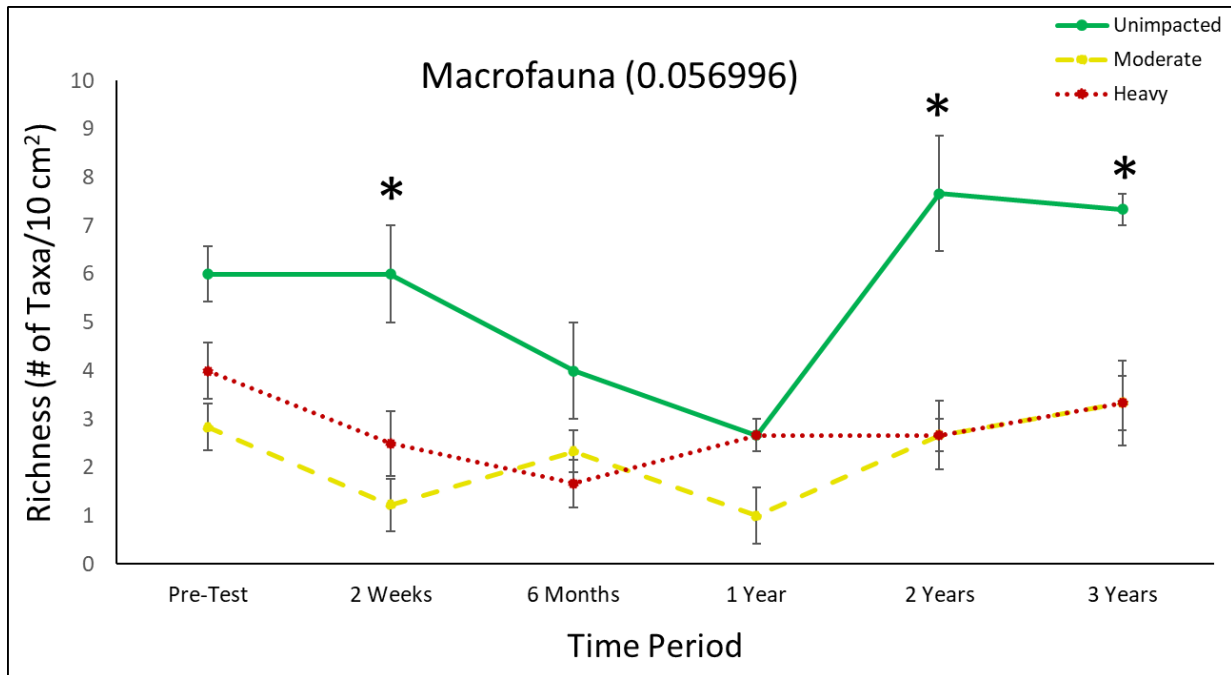


Fig. S8. Average macrofaunal taxa richness of all cores collected within an impact category and time period. The p-value in the title is for the interaction term of the 2-way ANOVA (impact category*time period), error bars represent standard error while asterisks indicate significant pairwise differences.